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Application No.	10/658,225
Filing Date	September 8, 2003
First Named Inventor	Justin K. Brask
Art Unit	1795
Examiner Name	Kathleen Duda
Attorney Docket Number	42P17298
Total Number of Pages in This Submission	

ENCLOSURES (check all that apply)

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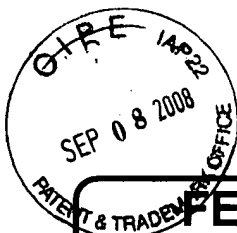
SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Justin K. Brask, Reg. No. 61,080 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	September 2, 2008

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FEE TRANSMITTAL for FY 2007

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT (\$) 510.00

Complete if Known

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FEE CALCULATION

Large Entity		Small Entity		Fee Description	Fee Paid
Fee Code	Fee (\$)	Fee Code	Fee (\$)		
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	460	2252	230	Extension for reply within second month	
1253	1,050	2253	525	Extension for reply within third month	
1254	1,640	2254	820	Extension for reply within fourth month	
1255	2,230	2255	1,115	Extension for reply within fifth month	
1401	510	2401	255	Notice of Appeal	
1402	510	2402	255	Filing a brief in support of an appeal	510.00
1403	1,030	2403	515	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	810	1809	405	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	810	2810	405	For each additional invention to be examined (37 CFR § 1.129(b))	
Other fee (specify) _____					
SUBTOTAL (2)					510.00

SUBMITTED BY

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FEE TRANSMITTAL for FY 2007

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Name (Print/Type)	Justin K. Brask	Registration No. (Attorney/Agent)	61,080	Telephone	(503) 439-8778
Signature		Date	09/02/08		



City. Docket No.: 42P17298

PATENT

1FW AF

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In Re Application of:

Justin K. Brask

Application No.: 10/658,225

Filed: September 8, 2003

For: METHODS AND COMPOSITIONS
FOR SELECTIVELY ETCHING METAL
FILMS AND STRUCTURES

Examiner: Duda, Kathleen

Art Unit: 1795

Confirmation No: 2688

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37(a)

This is an appeal to the Board of Patent Appeals and Interferences from the decision of the Examiner of Group 1795, dated April 1, 2008, in which Claims 13, 14, 16-18, 20-25 and 32-40 of the above-identified application were finally rejected. The Office's date of receipt of Appellant's Notice of Appeal was July 1, 2008. This Appeal Brief is hereby submitted pursuant to 37 C.F.R. § 41.37(a).

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I. REAL PARTY IN INTEREST

The real party in interest and assignee of record is Intel Corporation, a corporation of Delaware having a principle place of business at 2200 Mission College Blvd., Santa Clara, CA, 95052, United States of America.

II. RELATED APPEALS AND INTERFERENCES

To the best of Appellant's knowledge, there are no appeals or interferences related to the present appeal that will directly affect, be directly affected by, or have a bearing on the Board's decision in the instant appeal.

III. STATUS OF THE CLAIMS

Claims 13, 14, 16-18, 20-25 and 32-40 are pending in the present application.

Claims 1-12, 15, 19, and 26-31 have been canceled.

No Claims have been allowed.

Claims 13, 14, 16-18, 20-25 and 32-40 have been finally rejected under 35 U.S.C. 102(e) and 35 U.S.C. 103(a) in the Final Office Action mailed April 1, 2008.

Claims 13, 14, 16-18, 20-25 and 32-40 are the subject of this appeal. A copy of Claims 13, 14, 16-18, 20-25 and 32-40 as they stand on appeal are set forth in Appendix A.

IV. STATUS OF AMENDMENTS

Subsequent to the Final Office Action mailed April 1, 2008 Appellant canceled no claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This section of this Appeal Brief is set forth to comply with the requirements of 37 C.F.R. 41.37(c)(1)(v) and is not intended to limit the scope of the claims in any way. Exemplary implementations of the limitations of independent claim 13 and dependent claims 14, 16-17, 22-23 and 32 are described below.

Appellant's invention, as claimed in claims 13-14, 16-17, 22-23 and 32, is directed to a method. The method includes depositing a first metallic film and a second metallic film on a substrate. (*See* Appellant's specification, e.g., paragraphs 0023, 0027 and 0033, element 205 from Fig. 2, and element 405 from Fig. 4.) A layer of photoresist is deposited on at least the first metallic film. (*See* Appellant's specification, e.g., paragraphs 0024 and 0034, element 210 from Fig. 2, and element 410 from Fig. 4.) The photoresist is patterned such that a desired portion of the first metallic film is masked and an undesired portion of the first metallic film is exposed. (*See* Appellant's specification, e.g., paragraphs 0024 and 0034, element 210 from Fig. 2, and element 410 from Fig. 4.) Two or more chelating agents are selected based upon the metals contained in the first metallic film. (*See* Appellant's specification, e.g., paragraphs 0025, 0031 and 0035, element 215 from Fig. 2, and element 415 from Fig. 4.) The two or more chelating agents are used to remove the undesired portion of the first metallic film, wherein the two or more chelating agents do not impair the second metallic film. (*See* Appellant's specification, e.g., paragraphs 0025, 0031 and 0037, element 215 from Fig. 2, and element 425 from Fig. 4.)

In dependent claim 14, the method further comprises selecting a media in which to employ the two or more chelating agents based upon the metals contained in the first

metallic film. (See Appellant's specification, e.g., paragraphs 0032 and 0036 and element 420 from Fig. 4.)

In dependent claim 16, the two or more chelating agents are employed in a solution at a concentration ranging from approximately 0.5 – 5 moles/liter, for each chelating agent. (See Appellant's specification, e.g., paragraph 0025.)

In dependent claim 17, which depends from claim 14, the two or more chelating agents are employed in a solution selected from the group consisting of an acidic solution, a basic solution, a solvent solution, and a de-ionized water solution. (See Appellant's specification, e.g., paragraph 0032.)

In dependent claim 22, the two or more chelating agents are used in proportion to a proportion of metals of the first metallic film. (See Appellant's specification, e.g., paragraph 0031.)

In dependent claim 23, the two or more chelating agents are specifically tailored to bind with metals in the first metallic film. (See Appellant's specification, e.g., paragraph 0035.)

In dependent claim 32, the first metallic film is an alloy comprised of at least two different metals. (See Appellant's specification, e.g., paragraph 0031 which states in part, *"the chelating agents may be used in proportion to the proportion of the respective metals of the alloy."* Further support can be found in, e.g., paragraph 0035 which states in part, *"The chelating agents are specifically tailored to bind with the particular metal or metals of the metal film."* One of ordinary skill in the art would have known that distinguishing language such as *"respective metals"* and *"metal or metals"* means that an alloy may be "comprised of at least two different metals," as claimed by the Appellant).

Claims 18, 20-21, 24-25 and 33-40 are directed at methods with elements similar to the elements recited in claims 13-14, 16-17, 22-23 and 32, as described above. For example, claims 34-40 recite similar elements to claims 13-14, 16-17, 22-23 and 32, respectively. However, the elements “*depositing a layer of photoresist on at least the first metallic film*” and “*patterning the photoresist such that a desired portion of the first metallic film is masked and an undesired portion of the first metallic film is exposed,*” from claim 13 are replaced with the element “*masking the first metallic film such that a desired portion of the first metallic film is masked and an undesired portion of the first metallic film is exposed,*” in claim 34.

VI. GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL

Whether claims 13, 14, 16-18, 20-25 and 32-40 are unpatentable under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a), as obvious over Bojkov.

VII. ARGUMENT

Claim Rejections – 35 U.S.C. § 102(e)/103(a)

Claims 13, 14, 16-18, 20-25 and 32-40

Claims 13-14, 16-18, 20-25 and 32-40 stand rejected under 35 U.S.C. § 102(e)/103(a).

Independent claim 13, from which claims 14, 16-17, 22-23 and 32 depend, includes the elements, “*selecting two or more chelating agents based upon the metals contained in the first metallic film*” and “*using the two or more chelating agents to*

remove the undesired portion of the first metallic film.” Independent claim 18, from which claims 20, 21, 24, 25 and 33 depend, and independent claim 34, from which claims 35-40 depend, include similar elements. That is, in claims 13-14, 16-18, 20-25 and 32-40, the Appellant teaches and claims that at least two different species of chelating agents are selected to etch a metallic film based on the composition of the metallic film.

Bojkov fails to disclose “*selecting two or more chelating agents based upon the metals contained in the first metallic film*” and “*using the two or more chelating agents to remove the undesired portion of the first metallic film,*” as taught and claimed by the Appellant. Bojkov does disclose an “*etchant solution [which] contains a chelating agent that bonds ions from the seed layer.*” (See Bojkov, Abstract.) For example, col. 6, lines 42-45 of Bojkov states,

“It has been demonstrated for the example of copper that without the presence of **chelating agents**, the re-deposition can result in a 10 to 30% elemental copper film deposited on the outermost layer.” (Emphasis added.)

However, it is well known in the art that typical chelating agents can only bind one metal atom or ion at a time. Thus, a film containing many atoms or ions would require an etchant having numerous chelating agents. The use of plural “chelating agents” does not, however, indicate that more than one species of chelating agent is used in an etchant of Bojkov. In fact, the example from Bojkov provided above refers only to the etching of a copper film (i.e. a single metal-species film). Thus, one of skill in the art would not take the use of plural “chelating agents” in Bojkov to indicate anything other than more than one of the same species of chelating agent. This interpretation of “chelating agents,” i.e. to only mean more than one of the same species of chelating agent, is further supported in col. 5, lines 27-31 of Bojkov which states,

“According to the present invention, the preferred method is to add chelating agents to solution 501, which bind the seed ions into chemical complexes having a strong binding energy, or association constant.”
(Emphasis added.)

Like the example discussed above, the seed ions in this embodiment of Bojkov are only described as being copper ions. (*See* Bojkov, col. 5, lines 19-20.) Thus, again, one of skill in the art would not take the use of plural “chelating agents” in Bojkov to indicate anything other than more than one of the same species of chelating agent.

By contrast, the Appellant’s specification states in paragraph [0031],

“Multiple tailored chelating agents, each tailored to target a specific metal may be used in conjunction to target a specific alloy. For such an embodiment, the chelating agents may be used in proportion to the proportion of the respective metals of the alloy.”

Thus, the term “chelating agents” is used in the Appellant’s specification to refer to more than one species of chelating agent, wherein the more than one species may be used “*in proportion to the proportion of the respective metals of the alloy*.” Thus, **Bojkov discloses using more than one of the same species of a chelating agent**, whereas **the Appellant teaches and claims using two or more species of chelating agents**.

The Examiner states that,

“Bojkov specifically teaches that the chelating agents are chosen for the specific metals so if more than one metal is present it would be obvious to one of ordinary skill in the art that one would have to look for a chelating agent for each metal. (*See* Final Office Action dated, April 1, 2008, section 4, last paragraph.)

However, Bojkov is silent with respect to a second chelating agent. It is improper for the Examiner to rely on Bojkov to teach the element of a second chelating agent because this element is clearly not disclosed by Bojkov. Furthermore, only for the sake of argument, even if the metal film of Bojkov did contain more than one metal species, a single chelating agent capable of etching all such metals may be used, as is well known in the

art. Thus, **Bojkov does not disclose nor render obvious using two or more chelating agents to remove a portion of first metallic film without impairing a second metallic film**, as taught and claimed by the Appellant.

VIII. CONCLUSION

For at least the reasons stated above, claims 13, 14, 16-18, 20-25 and 32-40 are patentable. Appellant respectfully requests that the Board reverse the rejections of claims 13, 14, 16-18, 20-25 and 32-40 under U.S.C. § 102(e)/103(a) and direct the Examiner to enter a Notice of Allowance for claims 13, 14, 16-18, 20-25 and 32-40.

Fee For Filing A Brief In Support Of Appeal

Enclosed is a check in the amount of \$510.00 to cover the fee for filing a brief in support of an appeal as required under 37 C.F.R. 1.17(c) and 40.20(b)(2). (If a check is not enclosed, you are hereby authorized to charge the deposit account below).


Deposit Account Authorization

Authorization is hereby given to charge our Deposit Account No. 02-2666 for any charges that may be due. Furthermore, if an extension is required, then Appellant hereby requests such extension.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: September 2, 2008



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APPENDIX A : CLAIMS

Listing of Claims:

1. – 12. (Canceled)

13. (Previously presented) A method comprising:

depositing a first metallic film and a second metallic film on a substrate;

depositing a layer of photoresist on at least the first metallic film;

patterning the photoresist such that a desired portion of the first metallic film is

masked and an undesired portion of the first metallic film is exposed;

selecting two or more chelating agents based upon the metals contained in the first

metallic film; and

using the two or more chelating agents to remove the undesired portion of the first

metallic film, wherein the two or more chelating agents do not impair the second

metallic film.

14. (Previously presented) The method of claim 13 further comprising:

selecting a media in which to employ the two or more chelating agents based upon the

metals contained in the first metallic film.

15. (canceled)

16. (Previously presented) The method of claim 13 wherein the two or more chelating agents are employed in a solution at a concentration ranging from approximately 0.5 – 5 moles/liter, for each chelating agent.

17. (Previously presented) The method of claim 14 wherein the two or more chelating agents are employed in a solution selected from the group consisting of an acidic solution, a basic solution, a solvent solution, and a de-ionized water solution.

18. (Previously presented) A method comprising:

depositing a first metallic film and a second metallic film on a substrate;

depositing a layer of photoresist on at least the first metallic film;

patterning the photoresist such that a desired portion of the first metallic film is

masked and an undesired portion of the first metallic film is exposed;

selecting a media in which to employ two or more chelating agents based upon the

metals contained in the first metallic film; and

employing the two or more chelating agents to remove the undesired portion of the

first metallic film, wherein the two or more chelating agents do not impair the

second metallic film.

19. (Canceled)

20. (Previously presented) The method of claim 18 wherein the media is a liquid media selected from the group consisting of an aqueous acid media with oxidant, an aqueous

acid media without oxidant, an aqueous basic media without oxidant, and a solvent media without oxidant having a pH of approximately seven.

21. (Previously presented) The method of claim 18 wherein the two or more chelating agents are employed in a solution at a concentration ranging from approximately 0.5 – 5 moles/liter, for each chelating agent.

22. (Previously presented) The method of claim 13 wherein the two or more chelating agents are used in proportion to a proportion of metals of the first metallic film.

23. (Previously presented) The method of claim 13 wherein the two or more chelating agents are specifically tailored to bind with metals in the first metallic film.

24. (Previously presented) The method of claim 18 wherein the two or more chelating agents are used in proportion to a proportion of metals of the first metallic film.

25. (Previously presented) The method of claim 18 wherein the two or more chelating agents are specifically tailored to bind with metals in the first metallic film.

26. – 31. (canceled)

32. (Previously presented) The method of claim 13 wherein said first metallic film is an alloy comprised of at least two different metals.

33. (Previously presented) The method of claim 18 wherein said first metallic film is an alloy comprised of at least two different metals.

34. (Previously presented) A method comprising:

depositing a first metallic film and a second metallic film on a substrate;

masking the first metallic film such that a desired portion of the first metallic film is masked and an undesired portion of the first metallic film is exposed;

selecting two or more chelating agents based upon the metals contained in the first metallic film; and

using the two or more chelating agents to remove the undesired portion of the first metallic film, wherein the two or more chelating agents do not impair the second metallic film.

35. (Previously presented) The method of claim 34 further comprising:

selecting a media in which to employ the two or more chelating agents based upon the metals contained in the first metallic film.

36. (Previously presented) The method of claim 34 wherein the two or more chelating agents are employed in a solution at a concentration ranging from approximately 0.5 – 5 moles/liter, for each chelating agent.

37. (Previously presented) The method of claim 35 wherein the two or more chelating agents are employed in a solution selected from the group consisting of an acidic solution, a basic solution, a solvent solution, and a de-ionized water solution.

38. (Previously presented) The method of claim 34 wherein the two or more chelating agents are used in proportion to a proportion of metals of the first metallic film.

39. (Previously presented) The method of claim 34 wherein the two or more chelating agents are specifically tailored to bind with metals in the first metallic film.

40. (Previously presented) The method of claim 34 wherein said first metallic film is an alloy comprised of at least two different metals.

APPENDIX B: EVIDENCE

NONE

APPENDIX C: RELATED PROCEEDINGS

NONE